

What is claimed is:

1           1.       A priming system, the priming system being suitable for priming a substrate,  
2 the substrate including a plurality of wells, the priming system comprising:

3               a base unit, the base unit being arranged to removably receive the substrate; and

4               a top unit, the top unit being arranged to be removably coupled to the base unit, the  
5 top unit including an adapter portion having at least a first cavity therein which is configured to be  
6 aligned with a first well of the plurality of wells in the substrate when the top unit is coupled to the  
7 base unit, wherein the adapter portion is configured to facilitate changing pressure in the first well  
8 of the substrate when the at least first cavity is aligned with the first well.

1           2.       A priming system according to claim 1 further including:

2               a pumping unit, the pumping unit being arranged to cooperate with the first cavity of  
3 the adapter portion to pressurize the first well.

1           3.       A priming system according to claim 2 wherein the pumping unit is one of a  
2 luerlock syringe pump and a computer-controlled pump.

1           4.       A priming system according to claim 2 wherein the first cavity includes a  
2 first pressure port, and the pumping unit is in fluid communication with the first cavity and the first  
3 pressure port, the pumping unit further being arranged to pressurize the first well through the first  
4 cavity and the first pressure port.

1           5.       A priming system according to claim 4 wherein the adapter portion further  
2 includes a second cavity, the second cavity including a second pressure port, and wherein the  
3 pumping unit is in fluid communication with the second cavity and the second pressure port, the  
4 pumping unit further being arranged to pressurize a second well of the plurality of wells through the  
5 second cavity and the second pressure port substantially simultaneously with the first well.

1           6.       A priming system according to claim 4 wherein the adapter portion further  
2 includes a second cavity and the pumping unit is in fluid communication with the second cavity,

3 whereby a second well of the plurality of wells is not pressurized through the second cavity when  
4 the first well is pressurized through the first cavity and the first pressure port.

1 7. A priming system according to claim 1 wherein the base unit includes a  
2 locating arrangement, the locating arrangement being arranged to position the substrate with respect  
3 to the base unit.

1 8. A priming system according to claim 1 wherein the top unit further includes a  
2 top plate, the top plate being physically decoupleable from the adapter portion, wherein the top plate  
3 is coupled to the adapter portion to form the top unit.

1 9. A priming system according to claim 8 wherein the top plate is further  
2 arranged to be coupled to the base plate to support the substrate substantially between the base unit  
3 and the adapter portion.

1 10. A priming system according to claim 1 wherein the substrate includes a  
2 sipper and the base unit includes at least one opening through which the sipper may be inserted.

1 11. A priming system, the priming system being suitable for priming a first  
2 substrate of a first configuration and a second substrate of a second configuration, the first  
3 configuration being at least partially different from the second configuration, the first substrate  
4 including a first plurality of wells and at least one channel between selected wells of the first  
5 plurality of wells, the second substrate including a second plurality of wells and at least one channel  
6 between selected wells of the second plurality of wells, the priming system comprising:

7 a base unit, the base unit being arranged to position the first substrate and the second  
8 substrate individually thereon; and

9 a first top unit, the first top unit including a first adapter portion, the first adapter  
10 portion being arranged to interface substantially directly with the first substrate, the first adapter  
11 unit including a first cavity, wherein the first adapter portion is configured to facilitate  
12 pressurization of at least a first well of the first plurality of wells when the first adapter portion is  
13 interfaced substantially directly with the first substrate such that the first cavity is aligned with the  
14 first well of the first plurality of wells when the first substrate is positioned on the base unit, the top

15 unit being arranged to be coupled to the base unit to support the first substrate between the first  
16 adapter portion and the base unit.

1 12. A priming system according to claim 11 further including a second top unit,  
2 the second top unit being arranged to interface with the second substrate, the second adapter unit  
3 including a second cavity, wherein the second top unit is configured to facilitate pressurization of at  
4 least a first well of the second plurality of wells when the second top unit is interfaced with the  
5 second substrate such that the second cavity is aligned with the first well of the second plurality of  
6 wells when the second substrate is positioned on the base unit.

1 13. A priming system according to claim 11 wherein the first adapter portion is  
2 arranged to be decoupled from the first top unit, the priming system further including a second  
3 adapter portion, the second adapter portion being arranged to be coupled to the first top unit, the  
4 second adapter portion further being arranged to interface with the second substrate, the second  
5 adapter unit including a second cavity, wherein the second adapter portion is configured to facilitate  
6 pressurization of at least a first well of the second plurality of wells when the second top unit is  
7 interfaced with the second substrate such that the second cavity is aligned with the first well of the  
8 second plurality of wells when the second substrate is positioned on the base unit.

1 13. A priming system according to claim 12 wherein the first top unit is arranged  
2 to be coupled to only one of the first adapter unit and the second adapter unit at a time.

1 15. An adapter module for use in a priming station that is arranged to prime a  
2 substrate, the substrate having a plurality of wells, the adapter module comprising:  
3 a first interface, the first interface being arranged to receive a pump mechanism;  
4 a plurality of cavities;  
5 at least one channel, the at least one channel being in fluid communication with the  
6 first interface, the at least one channel further being in fluid communication with the plurality of  
7 cavities; and  
8 at least one first pressure port, the first pressure port being positioned within a first  
9 cavity selected from the plurality of cavities, wherein when the adapter module is positioned over

10 the substrate, the first pressure port within the first cavity is arranged to be positioned over a first  
11 well selected from the plurality of wells to prime the first well.

1 16. An adapter module according to claim 15 further including a coupler,  
2 wherein the coupler is arranged to be coupled to a plate apparatus, the plate apparatus being  
3 arranged to hold the pump mechanism.

1 17. An adapter module according to claim 15 wherein the adapter module is  
2 arranged to cooperate with the pump mechanism to prime the first well of the substrate through the  
3 first pressure port within the first cavity.

1 18. An adapter module according to claim 15 further including a second pressure  
2 port, the second pressure port being positioned within a second cavity selected from the plurality of  
3 cavities, wherein when the adapter module is positioned over the substrate, the second pressure port  
4 within the second cavity is arranged to be positioned over a second well selected from the plurality  
5 of wells to prime the second well.

1 19. An adapter module according to claim 15 wherein the adapter module is  
2 arranged to prime the substrate when the substrate is positioned on a plate, the adapter module  
3 further including:  
4 a protrusion, the protrusion being arranged to position the first pressure port over the  
5 first well when the protrusion is engaged by the plate.

1 20. A method for priming a chip, the chip including wells and channels, the chip  
2 being of a first configuration, the first configuration defining at least one selected well and at least  
3 one selected channel of the chip that are to be primed, the method comprising:

4 selecting an adapter module from a plurality of adapter modules, the adapter module  
5 being compatible for substantially only the first configuration;

6 positioning the chip on a base plate, the base plate being arranged to accommodate at  
7 least the first configuration;

8 positioning the adapter module over the chip on the base plate;

9 securing the adapter module over the chip on the base plate; and

10 changing pressure in the chip through the adapter module.

1 21. A method for priming a chip as recited in claim 20 further including coupling  
2 the adapter module to a top plate, wherein positioning the adapter module over the chip on the base  
3 plate includes positioning the top plate over the base plate, and securing the adapter module over the  
4 chip on the base plate includes coupling the top plate to the base plate.

1 22. A method for priming a chip as recited in claim 21 further including coupling  
2 a pump to the top plate, wherein changing pressure in the chip through the adapter module includes  
3 changing pressure in the chip through the top plate using the pump.

1 23. A method for priming a chip as recited in claim 20 wherein the adapter  
2 module defines cavities and includes at least one pressure port positioned within a selected cavity,  
3 and positioning the adapter module over the chip includes:

4 aligning the cavities with the wells, wherein aligning the cavities with the wells  
5 includes aligning the at least one pressure port within the selected cavity with the at least one  
6 selected well.  
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1 24. A method for priming a chip as recited in claim 20 wherein the chip includes  
2 a sipper, and positioning the chip on the base plate includes passing the sipper through an opening  
3 defined within the base plate.